



The Territory is prospective for a number of economically significant styles of rare earth elements (REE) mineralisation.

The Northern Territory hosts a diverse range of high-value REE mineral systems across large, underexplored geological provinces. Significant potential exists for carbonatite-related, unconformity-related, placer-type, clay-hosted, vein-hosted and phosphorite-hosted deposits. Multiple companies are advancing targeted, early-stage programs across these prospective terranes.

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	39
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y

LREE

HREE

La	Lanthanum	Ce	Cerium	Pr	Praseodymium	Nd	Neodymium
Pm	Promethium	Sm	Samarium	Eu	Europium	Gd	Gadolinium
Tb	Terbium	Dy	Dysprosium	Ho	Holmium	Er	Erbium
Tm	Thulium	Yb	Ytterbium	Lu	Lutetium	Y	Yttrium

Developing projects

Approvals in place

Geological Province	Name	Resource	Company
Aileron Province	Nolans	56 Mt @ 2.6% REO, 11% P ₂ O ₅	Arafura Rare Earths Ltd

Under feasibility

Geological Province	Name	Resource	Company
Aileron Province	Charley Creek	805 Mt @ 0.029% REO, 0.05% Zircon	Enova Mining Ltd
Carpentaria Basin	Barkly	40 Mt @ 0.21% TREO, 200 Mt @ 0.12% V ₂ O ₅	Barkly Rare Earths Limited

Exploration results

Geological Province	Name	Resource	Company
Aileron Province	Callista	18 m @ 0.45% TREO	GSW Resources Pty Ltd
Aileron Province	Southwark Shear Zone	6 m @ 0.53% TREO	URO Corp Ltd
Pine Creek Orogen	Quantum	7 m @ 0.49% TREO (re-assay of 2023 gold drilling)	Desoto Resources Ltd



Download NTGS REE information

resourcingtheterritory.nt.gov.au



Mining approvals in place

Arafura Rare Earths Ltd
ASX:ARU www.arultd.com

Arafura Rare Earths Ltd's globally significant Nolans project has the potential to meet up to 4% of the world's global supply of NdPr.

All approvals are in place for mining through to onsite separation of rare earths to produce 4440 tonnes per annum (tpa) of NdPr oxide, 470 tpa of a mixed middle-heavy rare earth (SEG/HREE) oxide (REO). Arafura also plan to produce 144,000 tpa of fertilizer-grade phosphoric acid (54% P₂O₅).

Arafura has secured binding offtake agreements with Hyundai, Kia, Traxys, and Siemens Gamesa and project financing is well advanced. A final investment decision is expected in 2026.



CAPEX A\$1,068
OPEX A\$200M



JORC Ore Reserves
29.5 Mt @ 2.9% REO,
13% P₂O₅



39+ year
mine life



Carbonatite-related REE mineralisation

Carbonatite-related REE mineralisation occurs in carbonatite rocks or associated alkaline intrusions emplaced along craton margins. The Territory is prospective for carbonatite-related REE mineralisation associated with the margin of the North Australia Craton in the Aileron and Irindina provinces of Central Australia.

The Territory's most significant REE deposit, Arafura Rare Earths Ltd's Nolans project, is located in the Aileron Province north of Alice Springs, and although not carbonatite-hosted, is interpreted to be carbonatite-related. The deposit is hosted within fluorapatite veins containing allanite and monazite, rich in the magnet-feed LREE neodymium and praseodymium (NdPr).

Recent carbonatite-hosted niobium and REE discoveries in the western Aileron Province in Western Australia (WA) highlight the broader region's potential. Companies with NT exploration licence applications for this style include GSW Resources Pty Ltd, Trek Metals Ltd, Encounter Resources Ltd, NT 1 Pty Ltd and WA1 Resources Ltd

Other companies exploring for carbonatite-related rare earths in central Australia include MetalsGrove Mining Ltd, Bubalus Resources Ltd, Megawatt Metals Corp, First Development Resources PLC and Askari Metals Ltd.

Unconformity-related REE mineralisation

There is emerging potential for unconformity-related heavy REE mineralisation across the Territory. A recent unconformity-related REE prospectivity study by Geoscience Australia has identified the Birrindudu-Halls Creek region as highly prospective, supported by nearby deposits such as the Browns Range system (10.8 Mt at 0.77% TREO) just across the Western Australia border. In the Tanami Region, Northern Minerals Ltd's Boulder Ridge prospect hosts outcropping xenotime-bearing veins within the NT.

Geoscience Australia's also identified new highly prospective regions in the South Nicholson Basin.

Additional favourable unconformities include the base of the greater McArthur Basin and the basal Amadeus Basin, where Heavy Rare Earths Ltd and others are progressing exploration.

Placer-type REE mineralisation

The Territory is prospective for accumulations of monazite and xenotime in heavy mineral sands and alluvial sediments. Enova Mining Ltd's Charley Creek HREE alluvial deposit has a large resource of detrital xenotime and monazite within alluvial fans in central Australia. Coastal heavy mineral sands deposits occur on the Tiwi Islands north of Darwin.

Clay-hosted REE mineralisation

Exploration for clay-hosted REE deposits is increasing in the Territory.

Xenotime-hosted HREE rich clays at the Skyfall and Stromberg prospects west of Pine Creek highlights potential for clay-hosted HREE mineralisation in the northern NT.

In 2023 Barkly Rare Earths Ltd announced a maiden resource of regolith-hosted rare earths at their Barkly project.

Other companies targeting clay-hosted rare earths include Green Critical Minerals Ltd, Energy Metals Ltd, URO Corp Ltd, and GSW Resources Pty Ltd.

Phosphorite-hosted REE mineralisation

Phosphorite-hosted REE occur in sedimentary phosphate rocks enriched by global seawater REE at the time of deposition. The Georgina Basin in the Northern Territory has large sedimentary phosphorite deposits with potential to host rare earths.

Recent work at Avenir Ltd's Wonarah phosphate deposit in the Georgina Basin has identified significantly anomalous REE mineralisation (up to 0.21% TREO) in a number of stratigraphic horizons within the deposit.

Other REE mineralisation styles

In addition to the mineralisation styles described above, the Aileron and Irindina provinces in central Australia may have potential for hydrothermal- and intrusion-related mineralisation styles. A rare earth-gold-uranium system in the Pine Creek Orogen at the Quantum prospect south of Darwin highlights the potential for rare earths associated with hydrothermal gold and uranium systems in the northern NT. New Frontier Minerals are exploring outcropping pegmatites in the Aileron Province with recent rock chips returning up to 20.12% TREO, including 1.71% Dy₂O₃, 0.23% Tb₄O₇ with 4.79% Nb₂O₅ and 18.19% Ta₂O₅.

